1   1. An ultra wideband receiver that suppresses self-noise, comprising:

2   a first mixer having a first input, a second input and an output;

3   a second mixer having a first input coupled to the output of the first mixer, a second

4   input and an output;

5   a codeword generator configured to generate an n-bit non-return-to-zero codeword

6   having a same predetermined sequence of bits as an encoding codeword used to encode a

7   transmitted data stream and invert a predetermined number of bits of the n-bit non-return-to-

8   zero codeword; and

9   a wavelet generator having an output coupled to the second input of the second mixer

10   and configured to output a sequence of ultra wideband wavelets having a predetermined

11   shape, wherein

12   ultra wideband wavelets received via an antenna coupled to the first input of the first

13   mixer, the wavelets having encoded therein the transmitted data stream encoded with the n-

14   bit non-return-to-zero codeword,

15   the n-bit non-return-to-zero codeword is input to the second input of the first mixer,

16   and

17   the output of the second mixer is a detection waveform having decoded therein the

18   transmitted data stream.

1   2. The receiver of Claim 1, further comprising:

2   an integrator having an input and an output, wherein

3   the output of the second mixer is coupled to the input of the integrator, and

4   a signal output by the integrator is used to decode the transmitted data stream from the

5   detection waveform.

1   3. The receiver of Claim 1, further comprising:

2   a network coupled between the output of the first mixer and the first input of the

3   second mixer configured to block a DC component of a signal output by the first mixer.

1   4. An ultra wideband receiver, comprising:

2   a self-noise suppression means for suppressing the noise generated by the receiver;

3   a detection waveform generation means coupled to the self-noise suppression means

4   for receiving ultra wideband wavelets via an antenna and generating a detection waveform

5   having encoded therein a transmitted data source.

1   5. The ultra wideband receiver of Claim 4, further comprising:

2   an integrator having an input and an output, the input being coupled to the detection

3   waveform generation means, wherein

4   a signal output by the integrator is used to decode the detection waveform.

1   6. The ultra wideband receiver of Claim 4, further comprising:

2   a DC bias blocking means for blocking a DC bias component of signals output by the

3   self-noise suppression means.

1   7. A method for suppressing self-noise in an ultra wideband receiver, comprising the

2   steps of:

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3   receiving a received signal of ultra wideband wavelets having encoded therein a

4   transmitted data stream via an antenna;

5   generating an n-bit non-return-to-zero codeword having a same predetermined

6   sequence of bits as an encoding codeword used by a transmitter for encoding the transmitted

7   data stream, a predetermined number of bits of the n-bit non-return-to-zero codeword being

8   inverted;

9   mixing the received signal with the n-bit non-return-to-zero codeword to produce an

10   intermediate signal;

11   generating an ultra wideband wavelet signal having a sequence of ultra wideband

12   wavelets having a same shape as ultra wideband wavelets used by the transmitter of the

13   received signal; and

14   mixing the intermediate signal with the ultra wideband wavelet signal to produce a

15   detection waveform.

1   8. The method of Claim 7, further comprising:

2   integrating the detection waveform to decode the transmitted data stream.

1   9. The method of Claim 7, further comprising:

2   blocking a DC component of the intermediate signal.

1   10. A computer program product, comprising:

2   a computer storage medium; and

3   a computer program code mechanism embedded in the computer storage medium for

4   performing an ultra wideband receiver self-noise suppressing method, the computer program

5   code mechanism having

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6   a first computer code device configured to generate an n-bit non-return-to-zero

7   codeword having a same predetermined sequence of bits as an encoding codeword used by a

8   transmitter for encoding a transmitted data stream, a predetermined number of bits of the n-

9   bit non-return-to-zero codeword being inverted for mixing with a received signal to produce
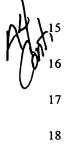
10   an intermediate signal;

11   a second computer code device configured to generate an ultra wideband wavelet

12   signal having a sequence of ultra wideband wavelets having a same shape as ultra wideband

13   wavelets used by the transmitter of the received signal for mixing with the intermediate signal

14   to produce a detection waveform.

1   11. An ultra wideband receiver that suppresses self-noise, comprising:

2   a de-jam code generator having a first input, a first output, and a second output, the

3   first input being configured to receive a transmit code used by an ultra wideband transmitter,

4   the first output and the second output being configured such that mixing the first output with

5   the second output produces a waveform that correlates to a transmitted waveform being

6   received;

7   a first mixer having a first input, a second input, and an output, the first input being

8   configured to receive a waveform from an antenna, the second input being configured to

9   receive the first output from the de-jam code generator;

10   a wavelet generator having an input and an output, the input being configured to

11   receive the second output from the de-jam code generator, and the output being configured to

12   generate a sequence of ultra wideband wavelets having a predetermined shape corresponding

13   to an encoding scheme used by the ultra wideband transmitter; and

14   a second mixer having a first input, a second input and an output, the first input being

15   configured to receive the output of the first mixer, the second input being configured to

16   receive the output of the wavelet generator, wherein

17   the output of the second mixer is a sequence of shaped wavelets having decoded

18   therein non-return-to-zero data transmitted by the ultra wideband transmitter